

**What Is Claimed Is:**

**1.** A biochip cartridge comprising:

a tabular substrate member formed using an elastic material;  
and

a flexible cover airtightly attached to the surface of said substrate member;

wherein at least an area for storing biopolymers, an area for detecting desired biopolymers from said biopolymers that have been preprocessed, and a flow path for connecting said areas is formed on said substrate member, so that biopolymers can be successively moved from said biopolymer storage area to said biopolymer detection area through said flow path.

**2.** The biochip cartridge of claim 1, wherein a flexible cover is airtightly attached to the surface of said substrate member and a collection area for storing biopolymers, a preprocessing area for applying preprocessing to said biopolymers, a detection area for detecting biopolymers, from among said preprocessed biopolymers, that combine with previously prepared biopolymers and gaps serving as a flow path for connecting said collection area, said preprocessing area and said detection area are formed in and on said substrate member, so that biopolymers can be successively transferred from said collection area through said preprocessing area to said detection area.

**3.** The biochip cartridge of claim 1 or 2, wherein said biopolymers are transferred by pressing said cover with a roller-like rigid body and squeezing each gap formed in said substrate member from said collection area through said

preprocessing area toward said detection area.

4. The biochip cartridge of claim 3, wherein a pocket to be filled with a preprocessing solution is formed in said substrate member and a preprocessing solution stored in said pocket is driven out into said preprocessing area when said roller is pressed down on said pocket.

5. The biochip cartridge of claim 3, wherein a waste liquid reservoir for storing waste liquid drained out of said detection area is formed in said substrate member.

6. The biochip cartridge of claim 1 or 2, wherein said cover is attached to both the top and bottom surfaces of said substrate member.

7. The biochip cartridge of claim 1 or 2, wherein gaps serving as said flow path formed in said substrate member are squeezed as said roller-like rigid body is pressed down on said gaps.

8. The biochip cartridge of claim 6, wherein said covers are formed using plastics or silica.

9. The biochip cartridge of claim 6, wherein said cover is formed using a transparent material so that optical detection can be achieved at least in said detection area.

10. The biochip cartridge of claim 4, wherein a plurality of said pockets for storing preprocessing solutions are formed in

different positions so that when said substrate member is squeezed with said roller-like rigid body, a preprocessing solution is driven out of each of said pockets into said preprocessing area in a time-differentiated manner.

11. The biochip cartridge of claim 1 or 2, wherein said substrate member is formed into a wedge shape so that the thickness thereof gradually decreases from said collection area toward said detection area.

12. The biochip cartridge of claim 1 or 2, wherein a valve for checking the flow of solutions is provided in said flow path and said valve opens when a solution flowing through said flow path is pressurized.

13. The biochip cartridge of claim 1 or 2, wherein said substrate member is formed using a plastic-deformable material or gel.

14. The biochip cartridge of claim 1 or 2, wherein said biochip cartridge is made separable into a first housing for extracting and storing said biopolymers from a biological sample and a second housing having a joint for attachably and detachably coupling with said first housing to enable biopolymers to be injected from said first housing, so that biological samples can be injected into said first housing and transferred from said first housing said to second housing at different timings.

15. The biochip cartridge of claim 14, wherein said biopolymers are DNA, RNA such as mRNA or cDNA, or protein.

16. The biochip cartridge of claim 14, wherein said second housing is provided with a substrate onto which second biopolymers having sequences complementary to said biopolymers are fixed so that said second biopolymers are hybridized with biopolymers injected from said first housing.

17. The biochip cartridge of any of claim 14, wherein at least said first housing is formed using a material having good flexibility.

18. The biochip cartridge of claim 16, wherein said second housing is formed using a transparent material.

19. The biochip cartridge of claim 1 or 2, wherein a preprocessing mechanism for performing preprocessing in order to turn biological samples into measurable biopolymers is provided in said substrate member and a slide glass type biopolymer microarray is mounted on said biochip cartridge, so that said processed biopolymers can be fixed in the array area of said microarray.

20. The biochip cartridge of claim 19, wherein the short and long sides of said slide glass type biopolymer microarray are not greater than  $25 \pm 1$  mm and  $75 \pm 1$  mm, respectively.

21. The biochip cartridge of claim 19, wherein said preprocessing mechanism includes:

a collection area for storing biological samples;

a preprocessing solution storage for storing preprocessing solutions to be applied to said biological samples;  
a washing solution storage for storing washing solutions used to clean post-preprocessing biopolymers;  
a combination area for performing hybridization on said slide glass type biopolymer microarray;  
a waste liquid reservoir for storing waste liquid; and  
a flow path for connecting all of said areas and storages;  
so that biological samples can be successively transferred from said collection area through said preprocessing area to said detection area.

**22.** The biochip cartridge of claim 19, wherein said biological samples are transferred by squeezing said substrate member with a rigid roller in the direction from said collection area toward said combination area.

**23.** The biochip cartridge of claim 19, wherein said slide glass type biopolymer microarray is airtightly mounted on said substrate member in such a manner that the array area of said slide glass type biopolymer microarray is opposed to said combination area.

**24.** The biochip cartridge of claim 19, wherein a cover formed using a rigid material is attached to said substrate member and a cavity is formed therebetween, said slide glass type biopolymer microarray being airtightly mounted on said substrate member in such a manner that the array area of said slide glass type biopolymer microarray is opposed to said combination area.

25. The biochip cartridge of claim 19, wherein said preprocessing mechanism includes a mechanism for extracting DNA or RNA.